TECHNICAL MEMORANDUM CH2MHILL

TO: Robert LeVar/AWWU

FROM: Floyd J. Damron/ANC FJD

DATE: November 5, 1990

SUBJECT: Point Woronzof WWTP Site Specific Criteria

PROJECT: ANC26264.A1

At the October 25, 1990, meeting with Doug Redburn/ADEC the required Site Specific Criteria (SSC) values for six metals in the Knik Arm of Cook Inlet were discussed. There are six metals that exceed Alaska's Water Quality Standards for marine water uses. These are chromium (hex), copper, mercury, nickel, lead, and zinc.

We prepared a graph for AWWU that showed the maximum background values and the recommended SSC value for each metal. The recommended SSC value was the highest measured background concentration plus EPA's chronic concentration. We also recommended that the SSC zone be the same as the State's chlorine mixing zone. (This zone is currently part of a 600 meter radius circle, but AWWU has requested this zone's radius be increased to 740 meters in the pending permit renewal application.)

Mr. Redburn proposed an alternative approach so the SSC zone can be as small as possible. He asked that a new graph be prepared that also shows the range of concentrations in the treatment plant's effluent for the six metals.

We have tabulated monthly values for the last four years and have listed the maximum and minimum values. (See the attached table.) Four years of data is a relatively short record and future effluent flows may include higher short term concentrations.

We reviewed the various existing and proposed ADEC and EPA zones for the Point Woronzof WWTP outfall. We have concluded that to meet ADEC's request, the new SSC zone can be the same as the existing ADEC fecal coliform zone which is a circle with a radius of 245 meters, centered on the diffuser. At the permit renewal period flow of 67 million gallons per day, the dilution is calculated to be 206:1.

There is risk of future Point Woronzof WWTP effluent violations by fine tuning the SSC zone to as small an area as the present data allows. A very limited amount of total recoverable metals data is available and future Knik Arm samples may contain higher background concentrations. We strongly recommend that ADEC consider this in their review of this information and allow for an increase in the SSC values if future background concentrations exceed existing data, and directly relate the SSC concentration to the background

concentration. We suggest that the new permit state the basis for the SSC for each metal.

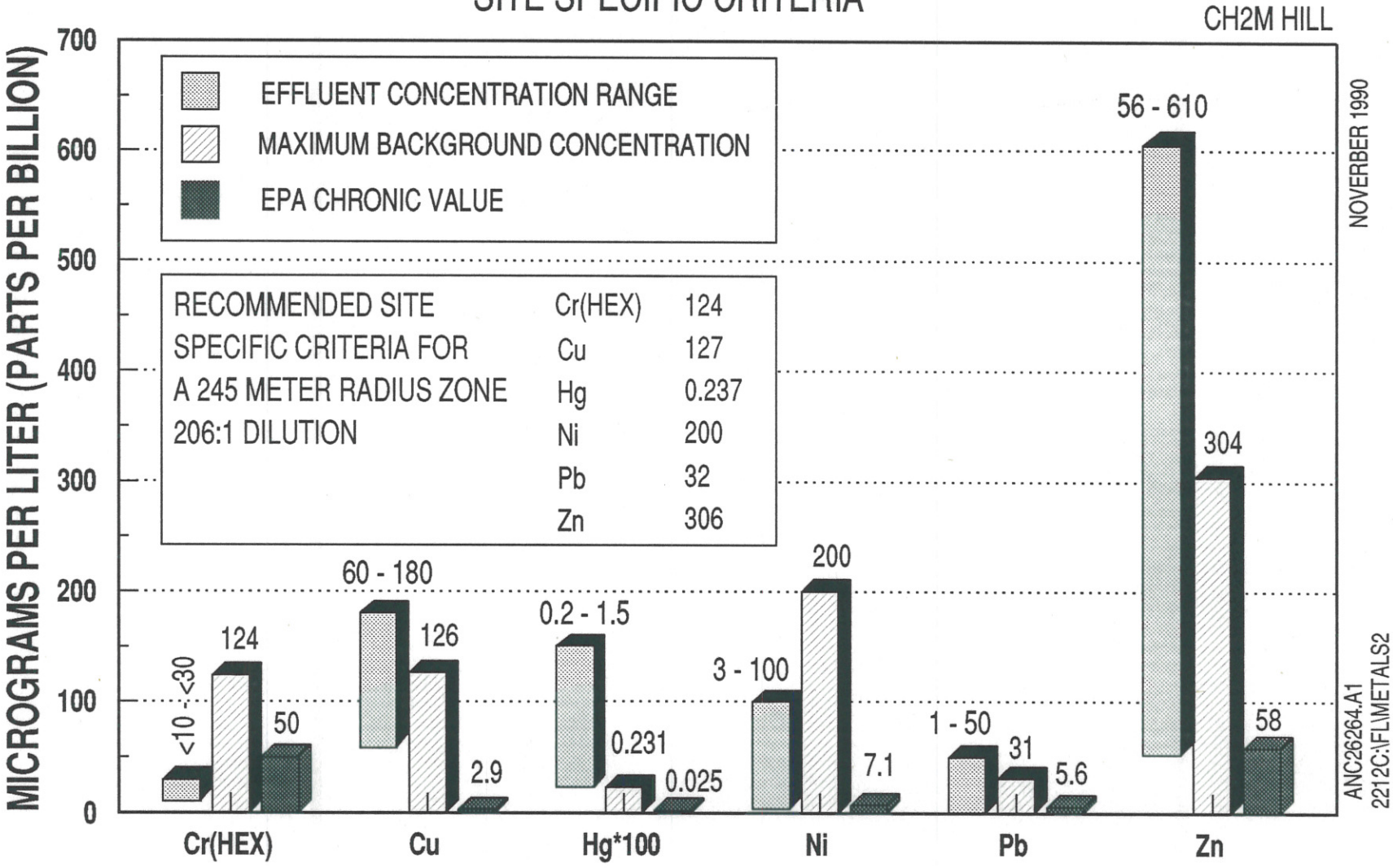
The attached figure shows the range of effluent concentrations, the maximum observed concentration in Knik Arm, the EPA chronic concentration, and the proposed SSC concentration. The values shown in the figure are listed below:

POINT WORONZOF WWTP 301(h) RENEWAL
SITE SPECIFIC CRITERIA FOR A 245 METER RADIUS ZONE
DILUTION 206:1
(Concentrations - Micrograms per Liter)

METAL	EFFLUENT CONCENTRATION RANGE 6/86 - 5/90	KNIK ARM MAXIMUM CONCENTRATION 1989	EPA CHRONIC CONCENTRATION	RECOMMENDED SITE SPECIFIC CONCENTRATION
Cr+6	<10 - <30	124	50	124
Cu	60 - 180	126	2.9	127
Hg	0.2 - 1.5	0.231	0.025	0.237
Ni	3 - 100	200	7.1	200
Pb	1 - 50	31	5.6	32
Zn	56 - 610	304	58	306

POINT WORONZOF WWTP 301(h) WAIVER RENEWAL

SITE SPECIFIC CRITERIA



DATABASE TABLE FOR POINT WORONZOF WWTP EFFLUENT METALS
FLOYD DAMRON ANC26264.A1 OCTOBER 26,1990

MONTH	MONTHLY MAXIMUM DAY CONCENTRATION, UG/L (PARTS PER BILLION) Cr+6	Cu	Hg	Ni	Pb	Zn
5/90	-	70	0.5	70	10	68
4/90	-	60	0.5	40	6	67
3/90	10	70	0.5	40	7	86
2/90	-	70	0.5	10	6	73
1/90	10	70	0.5	30	8	69
12/89	10	90	0.5	8	10	96
11/89	10	80	0.6	7	9	98
10/89	10	60	0.5	40	6	56
9/89	10	80	0.5	40	6	63
8/89	10	80	0.5	9	18	85
7/89	10	90	0.5	4	22	115
6/89	10	80	0.2	40	10	84
5/89	10	100	0.4	40	22	113
4/89	10	90	0.2	10	7	99
3/89	10	170	0.8	8	22	230
2/89	10	120	0.7	3	17	111
1/89	10	120	0.4	5	14	108
12/88	10	100	0.7	16	21	145
11/88	10	180	0.7	6	49	133
10/88	10	120	0.4	40	18	123
9/88	10	70	0.2	40	6	59
8/88	10	150	0.5	4	12	119
7/88	10	100	0.2	40	12	78
6/88	10	90	0.2	40	7	118
5/88	10	140	0.3	50	12	120
4/88	10	90	0.2	50	14	89
3/88	10	150	0.3	40	12	129
2/88	10	130	0.3	40	17	107
1/88	10	70	0.2	40	18	86
12/87	10	90	0.2	40	12	59
11/87	10	130	0.2	40	19	113
10/87	10	140	0.3	40	17	119
9/87	10	100	1.5	40	18	133
8/87	-	100	0.2	50	15	94
7/87	10	70	0.2	50	5	60
6/87	10	130	0.2	40	50	129
5/87	10	100	0.4	60	20	108
4/87	10	80	0.3	40	14	86
3/87	10	150	0.2	40	1	136
2/87	10	70	0.4	40	1	79
1/87	10	70	0.2	40	21	87
12/86	10	80	0.3	40	16	70
11/86	10	110	1.4	40	5	100
10/86	10	70	0.5	40	10	80
9/86	20	80	0.5	40	48	100
8/86	20	110	1	100	10	610
7/86	30	90	0.6	60	12	120
6/86	10	140	0.5	40	24	540

	Cr+6	Cu	Hg	Ni	Pb	Zn
MAX VALUE	30	180	1.5	100	50	610
MIN VALUE	10	60	0.2	3	1	56

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